CLAIMS:

1. A loudspeaker comprising:

a diaphragm;

a rare earth magnet arranged to define a flux gap in a perimeter region of the diaphragm; and

a voice coil, wherein the voice coil comprises a cylindrical polymer bobbin having lead-in conductors embedded therein, and wire windings extending around the cylindrical bobbin, wherein the wire windings are connected to said lead-in conductors forming a low impedance voice coil and the lead-in conductors extend from said perimeter region to provide a flexible connection to an input drive signal.

2. The loudspeaker of claim 1, wherein the wire windings are connected in parallel and layered on top of one another.

3. The loudspeaker of claim 2, wherein the coils comprise wires having round cross-sections.

4. The loudspeaker of claim 2, in which the magnet is a ring magnet and the lead-in connectors connect through a central opening in the magnet.

5. The loudspeaker of claim 4, wherein the flux gap is defined by a first pole piece forming a generally cup-like housing contacting a first side of the magnet, and a second pole piece contacting an opposite side of the magnet to position and focus magnetic flux as a substantially uniform field across said gap in the peripheral region.

6. The loudspeaker of claim 5, wherein the first and second pole pieces each have a central aperture therein.

7. The loudspeaker of claim 1, wherein the diaphragm has a diameter between approximately 0.7 and 1.5 inches.

8. The loudspeaker of claim 7, wherein the diaphragm is a shaped metal diaphragm having a mass loading layer on its surface.

9. The loudspeaker of claim 8, wherein the mass loading layer substantially doubles the mass of the diaphragm to shift its resonance below several hundred Herz.

10. The loudspeaker of claim 1, further comprising an air passage positioned centrally behind the diaphragm and communicating with an auxiliary acoustic space.

11. The loudspeaker of claim 1, wherein the wire windings comprise two or more wire coils connected in parallel and layered on top of one another to substantially fill the flux gap.

12. The loudspeaker of claim 11, further comprising a magnetic fluid restrained by flux to reside in the flux gap for effective thermal transfer from the coils.

13. The loudspeaker of claim 1, wherein the rare earth magnet contains neodymium.

14. The loudspeaker of claim 13, wherein magnet is a neodymium boron iron ring magnet.

15. A loudspeaker system comprising at least one broad range speaker, each such broad range speaker including

a diaphragm having a diameter between about 15 and 40 millimeters and a polymer coating effective to suspend the diaphragm with a resonance below about 200 Hz;

a rare earth magnet arranged to define a flux gap in a perimeter region of the diaphragm; and

a voice coil having windings in said gap and connected to drive the diaphragm down to resonance, wherein the wire windings are connected to lead-in conductors that extend between said perimeter region and a central aperture positioned behind the diaphragm; and said system further includes

a console housing a subwoofer effective with said at least one broad range speaker to form a full range system.

16. The loudspeaker system of claim 15, wherein the console includes a docking system for an audio source and at least one class D amplifier for apply the audio souce as an amplified drive signal to the speakers.

17. A loudspeaker comprising:

a diaphragm having a diameter between about 15 and 40 millimeters and a polymer coating effective to suspend the diaphragm with a resonance below about 200 Hz;

a rare earth magnet arranged to define a flux gap in a perimeter region of the diaphragm; and

a voice coil having windings in said gap and connected to drive the diaphragm down to resonance, wherein the wire windings are connected to lead-in conductors that extend between said perimeter region and a central aperture positioned behind the diaphragm.